Volunteer Lake Assessment Program Individual Lake Reports

SHOWELL POND, SANDOWN, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	154	**Max. Depth (m):**	8	**Flushing Rate (yr^{1})**	1.2
Surface Area (Ac.):	20	**Mean Depth (m):**	3.1	**P Retention Coef:**	0.7
Shore Length (m):	1,000	**Volume (m^3):**	235,500	**Elevation (ft):**	229

TROPHIC CLASSIFICATION

Year	Trophic class
1997	EUTROPHIC
2006	EUTROPHIC

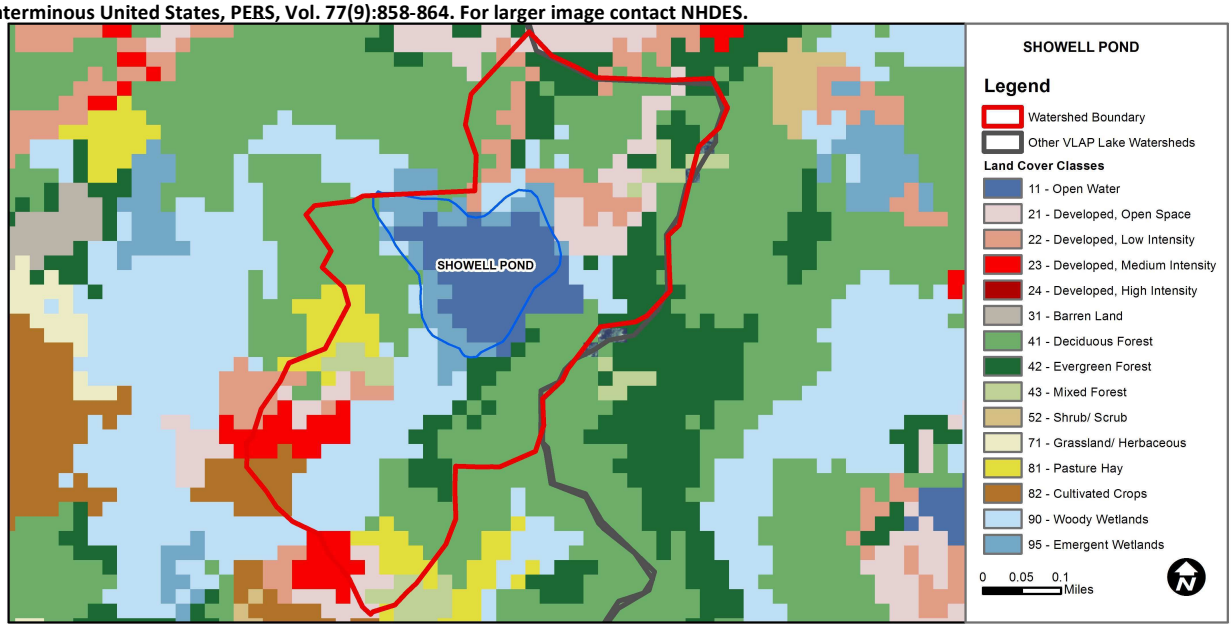
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Bad	>/=5 samples and median is >2x threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Bad	>/=5 samples and median is >2x threshold.
Primary Contact Recreation	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.
	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



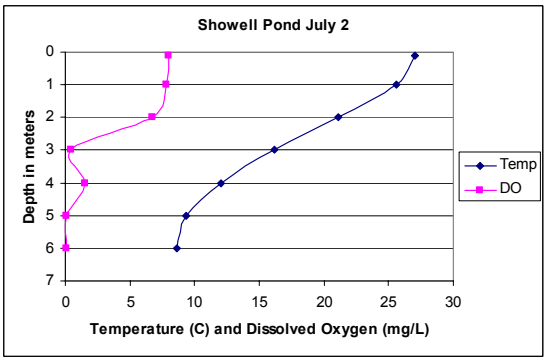
Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	11.6	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	7.42	Deciduous Forest	29.19	Pasture Hay	4.35
Developed-Low Intensity	6.45	Evergreen Forest	11.13	Cultivated Crops	2.1
Developed-Medium Intensity	4.35	Mixed Forest	2.9	Woody Wetlands	15
Developed-High Intensity	0	Shrub-Scrub	0	Emergent Wetlands	5.81

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
SHOWELL POND, SANDOWN, NH
2012 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphic)*

- **CHLOROPHYLL-A:** Chlorophyll levels were greatly elevated in July and September and cyanobacteria blooms occurred throughout the summer and fall. Historical trend analysis indicates a relatively stable chlorophyll level since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Conductivity was elevated at all stations and chloride was slightly greater than the NH lake median.
- **TOTAL PHOSPHORUS:** Epilimnetic (upper water layer) phosphorus levels were stable in July and September and much greater than the NH lake median. Hypolimnetic (lower water layer) phosphorus levels were elevated due to the release of phosphorus from lake sediments under conditions of oxygen depletion. Inlet and Outlet phosphorus levels were also elevated.
- **TRANSPARENCY:** Transparency decreased greatly from July to September due to the cyanobacteria bloom. Historical trend analysis indicates a relatively stable transparency since monitoring began.
- **TURBIDITY:** Epilimnetic and hypolimnetic turbidity was elevated due to algal and cyanobacteria growth, particularly in September. Inlet and Outlet turbidity was average for those stations.
- **PH:** Hypolimnetic pH tends to drop below desirable levels.
- **RECOMMENDED ACTIONS:** Utilize the TMDL report to apply for a Watershed Assistance Grant to assist with implementing BMPs to reduce phosphorus loading. Monitor nitrogen levels at the deep spot to help assess whether nitrogen is triggering the cyanobacteria blooms and not phosphorus.

Dissolved Oxygen & Temperature Profile



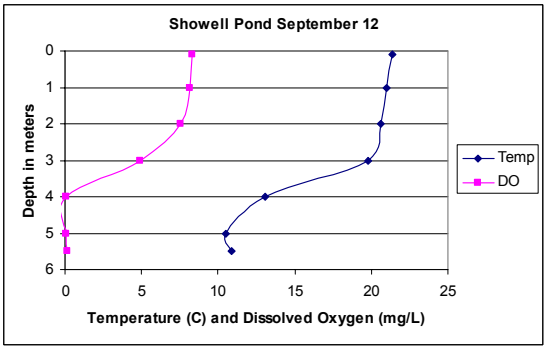
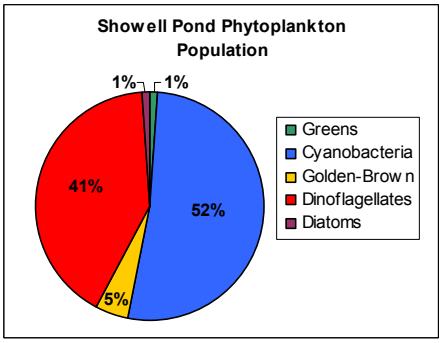


Table 1. 2012 Average Water Quality Data for SHOWELL POND

Station Name	Alk.	Chlor-a	Chloride	Cond.	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	ug/l	m		ntu	
						NVS	VS		
Deep Epilimnion	15.0	33.6	19	129.5	24	1.34	1.58	6.90	7.01
Deep Hypolimnion				142.2	50			9.58	6.39
Inlet				181.4	43			1.50	7.01
Little Mill Road Outlet				195.0	56			1.82	6.75

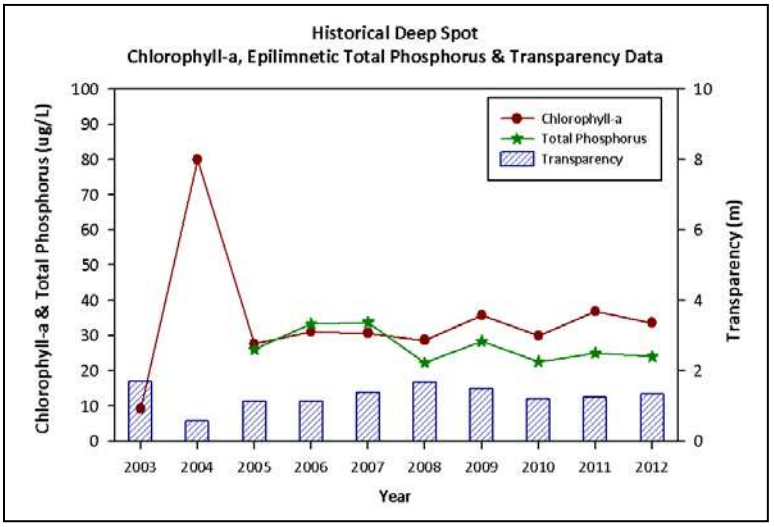


NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Stable	Data not significantly increasing or decreasing.
Transparency	Stable	Data not significantly increasing or decreasing.
Phosphorus (epilimnion)	N/A	Ten consecutive years of data necessary for trend analysis.



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